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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/679,042	10/03/2003	Johann Schuster	P03,0377	1644
26574	7590	03/03/2005	EXAMINER	
SCHIFF HARDIN, LLP PATENT DEPARTMENT 6600 SEARS TOWER CHICAGO, IL 60606-6473			FETZNER, TIFFANY A	
			ART UNIT	PAPER NUMBER
			2859	

DATE MAILED: 03/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center">Office Action Summary</p>	<p>Application No.</p> <p align="center">10/679,042</p>	<p>Applicant(s)</p> <p align="center">SCHUSTER ET AL.</p>	
	<p>Examiner</p> <p align="center">Tiffany A. Fetzner</p>	<p>Art Unit</p> <p align="center">2859</p>	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</p> <p>2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</p> <p>3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____.</p> | <p>4) <input type="checkbox"/> Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.</p> <p>5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</p> <p>6) <input type="checkbox"/> Other: _____.</p> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 02/23/2004 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner. The examiner initialed IDS is attached to this office action.

Response to Arguments

3. Applicant's arguments with respect to **claims 1-16** from the December 13th 2004 amendment and response have been considered but are moot in view of the new ground(s) of rejection.
4. Applicant's arguments with respect to the provisional double patenting rejection of **claims 1-9** from the December 13th 2004 amendment and response have been considered but the examiner believes that applicant has confused the examiners position. The examiner agrees that double patenting rejections are based on what is claimed. The co-pending **Schuster** application **claims 1,2, 23 and 24** teach and set forth the limitations claimed by applicant in **claims 1-9** of the instant application. The applicant's application is **Schuster et al.**, not the co-pending **Schuster** application. Applicant's arguments indicate that applicant believes the examiner to be applying applicant's own claim 1 against applicant. This is not the case.
5. In order to clarify the double patenting concern, the examiner has clarified in the rejection below that the **Schuster** reference mentioned below is the co-pending **Schuster** application and not the applicant's instant application of **Schuster et al.** The examiner notes that applicant's instant application only has two figures while the co-pending **Schuster** application 10/678,808 has three figures therefore figures 1-3 are noted from the co-pending **Schuster** application 10/678,808. The examiner is relying on the claim terminology of co-pending **Schuster** application 10/678,808 in making the provisional nonstatutory double patenting rejections below.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

7. A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

8. Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. **Applicant's Claims 1-9** are still **provisionally rejected** under the judicially created doctrine of double patenting over **claims 1-2** and **23-24**, of copending **Schuster** Application No. **10/678,808** filed **October 3rd 2004** [See **Schuster** US Patent Application Publication 2004/0113618 A1 published June 17th 2004], This is a **provisional double patenting rejection** since the conflicting claims have not yet been patented. The examiner notes that **claims 1** and **23** of the co-pending **Schuster** application are independent claims with **claim 2** depending from **claim 1** and **claim 24** depending from **claim 23**. The examiner notes that what is important is the structure set forth in the claims. The limitations of the instant application from **claims 1-9** are also found within the features of co-pending **Schuster** application **claims 1-2** and **23-24**.

10. The subject matter claimed in the instant application is fully disclosed and claimed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows:

A) Applicant's **claim 1** cavity limitation is met by the first limitation of copending **Schuster** application **claim 23**.

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B) Applicant's **claim 1** gradient coil system limitation is met by the second limitation of copending **Schuster** application **claim 23** and **Schuster** co-pending application **claim 1**, with respect to figures 1-3 of the copending **Schuster** application, because limitations 2 and 3 of the copending **Schuster** application **claim 1** and the second limitation of copending **Schuster** application **claim 23**, structurally define "end and middle" regions claimed by applicant in applicant's claim 1, because the antenna system of the copending **Schuster** application is located in the middle region with a structural unit being located on either "end", such that 'two structurally independent gradient units which are separated from one another but attached to the patient carrier which receives the examination subject, with a space between the system'; (i.e. copending **Schuster** application **claim 23**) is an intrinsic gradient system with edge regions on either end of the independent gradient units, and a "middle region" defined by the space between the independent gradient units, which is equivalent to **applicant's claim 1** terminology. The space in the middle region also indicates an intrinsic "reduced mechanical stiffness compared to the edge regions", because the two independent gradient system units provide direct mechanical support to the edges of the gradient coil system, but the space in the middle automatically and intrinsically reduces the mechanical support.

C) Applicant's **claim 1** supporting arrangement limitation is met by copending **Schuster** application **claim 24**.

D) Applicant's **claim 2** "carrier" limitation is met by the second limitation of copending **Schuster** application **claim 23**, limitation 2 that requires a carrier.

E) Applicant's **claim 3** multiple sub-coil limitation is met by the second limitation of copending **Schuster** application **claim 23**, limitation 2 that requires multiple sub-coils as claimed by applicant.

F) Applicant's **claim 4** structurally independent gradient coil unit limitation is met by the second limitation of copending **Schuster** application **claim 23**, limitation 2 which requires at least two structurally independent gradient coil units.

G) Applicant's **claim 5** which requires that the two structurally independent gradient coil units be separated in the middle is met by the second limitation of copending

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Schuster application claim 23, limitation 2 which requires a middle separation of the structurally independent gradient coil units. [See also figures 1-3].

H) Applicant's **claim 6** the carrier hollow cylindrical shape limitation is met by copending **Schuster application claim 2**.

I) Applicant's **claim 7** the gradient units hollow cylindrical shape limitation is met by copending **Schuster application claim 2**.

J) Applicant's **claim 8** the gradient coil middle region barrel shape limitation is met by copending **Schuster application claim 24**.

K) Applicant's **claim 9** the cavity middle region barrel shape limitation is met by copending **Schuster application claim 24**.

Claim Objections

11. **Claims 3, 4, and 5** are objected to because applicant has not clearly defined what the "units" are in these claims. There appears to be a lack of antecedent basis since it is unclear whether applicant is referring to "one of the plurality of gradient coils", or one of the "multiple sub-coils". Claim 1 does not provide support for the term "units". Appropriate correction is required.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. **Claims 1-12 and 16** are rejected under **35 U.S.C. 102(b)** as being anticipated by **Takeshima** US patent 6,154,110 issued November 28th 2000.

14. With respect to **Claim 1**, **Takeshima** teaches "A magnetic resonance apparatus comprising: a magnetic resonance scanner having a cavity therein adapted to receive a subject", [See col. 1 lines 5-15, col. 2 lines 54-61, and figures 13a, 13b, 1a, 1b, 5a, 5b, and 9 which shows the examination cavity into which a subject to be imaged is placed.] The **Takeshima** figures 13a, 13b, 1a, 1b, 5a, 5b, and 9 show "said cavity having a boundary surface," [See figures 13a, 13b, 1a, 1b, 5a, 5b, and 9] "a gradient coil system

disposed in said cavity”, [See col. 1 line 4 through col. 8 line 48, components: 6 gradient main coil, 7 gradient shield coil, 14 gradient coil system, 15 gradient main coil, 16a gradient disk-like shield coil, 16B gradient cylindrical / cone shaped shield coil, 16c gradient disk-like shield coil, and gradient magnetic field coil 2, in figures 6, 7, 8, 9, 10, 13a, 13b, 14, 5a, 5b, 1a, 1b, and 4] “said gradient coil system having a middle region” [See component 16A of figures 7, 3, and 4] “and edge regions” (i.e. components 16c) “respectively disposed on opposite sides of, and adjoining, said middle region”, [See figures 7, 3, and 4 components 16A, 16c; col. 7 line 24 through col. 8 line 48] “said middle region having a reduced mechanical stiffness compared to said edge regions;” [See figure 7, which shows edge region component 16c fully supported by superconducting magnet 11, while component 16a is held above superconducting magnet 11 within recessed cavity 18 or the main magnet 11, or above / below hollow portion 19 in figures 5a, 5b between the superconducting magnet poles 11] “and a supporting arrangement” [See component 16B of figures 7, 3, and 4. See also figures 6, 14, 8, 5a, and 5b.] “to support said middle region against said boundary surface of said cavity” [See figure 7 slanted components 16B, col. 7 line 24 through col. 8 line 48, which also teaches applying figure 7 to figures 3 and 4].

15. With respect to **Claim 2**, **Takeshima** shows that “said gradient coil system comprises a carrier.” [See **Takeshima** figures 3, 4, 5b, 6, 7, 8, 13a, 14 where the gradient coil assembly components 6, 7, 15, and 16 comprising coil components 15, 16, 16a, 16b, 16c, 6, and 7 are an intrinsic gradient carriers because they are comprised of other gradient coil components and retain the other gradient coil components is a specific geometrical relationship.] The same reasons for rejection, that apply to **claim 1** also apply to **claim 2** and need not be reiterated.

16. With respect to **Claim 3**, **Takeshima** shows that “said gradient coil system comprises a plurality of gradient coils” [See main gradient coil component 15, 6, or shield gradient coil component 16, 7 of figure 8 in combination with figures 7, 6, 5a, 5b, 3, 4, 14 and col. 5 line 55 through col. 6 line 50] “each composed of multiple sub-coils” [See the x, y, and z gradient coils of figure 8 figure 8 in combination with figures 7, 6 and col. 5 line 55 through col. 6 line 50] and **Takeshima** teaches “at least two units” (i.e.

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15, 16a, 16b, and 16c disposed on said carrier respectively comprising parts of said sub-coils." [See col. 7 lines 24 through col. 8 line 48; col. 5 line 55 through col. 6 line 50 and figure 8 in combination with figures 7, 6] The same reasons for rejection, that apply to **claims 1, and 2** also apply to **claim 3** and need not be reiterated.

17. With respect to **Claim 4**, **Takeshima** shows that "at least one of those units" is a structurally independent unit." [See components 16A and 15 Figures 3, 5 col. 6 lines 15-52, especially col. 6 lines 48-50; col. 4 lines 42-48] The same reasons for rejection, that apply to **claims 1, 2, 3** also apply to **claim 4** and need not be reiterated.

18. With respect to **Claim 5**, **Takeshima** shows that "said two units" (i.e. gradient coil main coil component 15, and gradient coil shield component 16A, of figure 7) "in said middle region", [See figure 7, in combination with figures 3, 4, 5b, and 6] "are attached to said carrier separated from each other." [See figures 7, 3, 4, 5b, and 6.] The same reasons for rejection, that apply to **claims 1, 2, 3** also apply to **claim 5** and need not be reiterated.

19. With respect to **Claim 6**, **Takeshima** shows from the figures that "said carrier has a hollow cylindrical shape." [See Figures 1a through figure 14 in combination with the teachings of col. 2 line 62 through col. 3 line 27; col. 5 line 55 through col. 6 line 8; col. 7 line 24 through col. 8 line 48] The same reasons for rejection, that apply to **claims 1, and 2** also apply to **claim 6** and need not be reiterated.

20. With respect to **Claim 7**, **Takeshima** teaches and shows that "said units each have a hollow cylindrical shape." [See Figures 1a through figure 14, in combination with figure 8 and in combination with the teachings of col. 2 line 62 through col. 3 line 27; col. 5 line 55 through col. 6 line 8; col. 7 line 24 through col. 8 line 48] The same reasons for rejection, that apply to **claims 1, 2, 6** also apply to **claim 7** and need not be reiterated.

21. With respect to **Claim 8**, **Takeshima** teaches and shows that "said gradient coil system has a hollow-cylindrical shape." [See Figures 1a through figure 14, in combination with figure 8 and in combination with the teachings of col. 2 line 62 through col. 3 line 27; col. 5 line 55 through col. 6 line 8; col. 7 line 24 through col. 8 line 48] The same reasons for rejection, that apply to **claim 1** also apply to **claim 8** and need not be reiterated.

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22. With respect to **Claim 9**, **Takeshima** shows from figure 7 in combination with figures 3, 4, 6, 8, and 14 that "said cavity, in a region thereof corresponding to said middle region of said gradient coils system, has a barrel shape." [See also col. 8 lines 17-48] The same reasons for rejection, that apply to **claim 1** also apply to **claim 9** and need not be reiterated.

23. With respect to **Claim 10**, **Takeshima** teaches and shows that "said cavity has cylindrical" (i.e. tubular) "regions respectively on opposite sides of, and adjoining, said region with said barrel shape." [See Figures 4, 5a, 5b, 6, 8, 14 and especially figure 7, in combination with the teachings of col. 2 line 62 through col. 3 line 27; col. 5 line 55 through col. 6 line 8; col. 7 line 24 through col. 8 line 48] The same reasons for rejection, which apply to **claims 1, 9** also apply to **claim 10** and need not be reiterated.

24. With respect to **Claim 11**, **Takeshima** teaches and shows that "said scanner comprises a basic field magnet" (i.e. component 11) "forming said cavity." [See Figures 7, 5a, 3, and 4, col. 1 lines 6-14; col. 7 line 24 through col. 8 line 48] The same reasons for rejection, that apply to **claim 1** also apply to **claim 11** and need not be reiterated.

25. With respect to Amended **Claim 12**, **Takeshima** shows that "said gradient coil system has a circumference", [See figures 1a through 14] "and wherein said support arrangement" (i.e. component 16B comprises at least three supporting elements circumferentially distributed around said gradient coil system." [See Figure 7 the examiner notes that as per figure 5b the top gradient coil system is a mirror of the lower coil system, therefore even though only one half of the gradient coil structure is shown in figure 7, there are at least four components 16B, distributed around said gradient coil system" (i.e. two components 16B in the lower half and two in the upper half). 4, col.5 lines 34-54 and col. 7 line 24 through col. 8 line 48]. The same reasons for rejection, that apply to **claim 1** also apply to **claim 12** and need not be reiterated.

26. With respect to **Claim 16**, **Takeshima** shows from figures 5a, 5b, 6, 7, 8, 14, 13a, 13b that "said gradient coil system is wedged in said cavity." [See figures 5a, 5b, 6, 7, 8, 14, 13a, 13b in combination.] The same reasons for rejection, that apply to **claim 1** also apply to **claim 16** and need not be reiterated.

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Claim Rejections - 35 USC § 103

27. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

28. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

29. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

30. **Claims 1-12 and 16** are rejected under **35 U.S.C. 103(a)** as being anticipated by **Takeshima** US patent 6,154,110 issued November 28th 2000 as applied to **claims 1-12 and 16** above in further view of **Minas** US patent 6,456,074 B1 issued September 24th 2002, filed January 28th 2000.

31. With respect to **Claim 15**, **Takeshima** lacks directly teaching that "said gradient coil system is attached to said boundary surface of said cavity by an adhesive." However, **Minas** teaches this limitation [See **Minas** col. 6 lines 5-14 where "FIG. 6 illustrates a typical construction of a gradient field main coil 36 (a component in a gradient fields coil assembly 28) which includes a Z axis coil 54 embedded in a glass

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epoxy structure 56. Adjacent to the Z-axis coil 54 is the Y-axis coil 58, which in turn is adjacent to the X-axis coil 60. ... The space 62 between the structure 56 and the Y axis coil 58 is filled with a thin composite layer, for example, glass-epoxy, that hardens in place to rigidize the assembly". Therefore the examiner notes that attaching gradient coil systems to the boundary of the cavity" [See Minas figures 3 and 5 where the relationship of figure 6 to the cavity and cavity boundary are shown] "by glass/epoxy (i.e. epoxy is an adhesive) material is taught to be conventional in previous and known gradient systems.

32. It would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the teaching of **Takeshima** [See **Takeshima** [figure 8 and col. 6 lines 33-50] with the teaching of **Minas** because Figure 6 of **Minas** teaches an upper gradient coil system 36 which corresponds mirror-symmetrically to the lower gradient main coil structure 15 of **Takeshima** figure 8, and **Takeshima** teaches that the order of the x, y, and z gradient coil components is arbitrary, therefore having a layer of epoxy securing the x, y, and z coil components to each other and the main cavity boundary, to prevent coil movement is already well established within known MRI systems and does not provide a grounds for novelty by itself. The same reasons for rejection, that apply to **claim 1** also apply to **claim 15** and need not be reiterated.

33. **Claims 13 and 14** are rejected under **35 U.S.C. 103(a)** as being anticipated by **Takeshima** US patent 6,154,110 issued November 28th 2000 as applied to **claims 1-12 and 16** above in further view of **Damadian et al.**, US patent 6,346,816 B1 issued February 12th 2002, filed November 26th 1997. [See gradient coil components 98, 102, 142; figures 5a, 5b, 6, 7, 8, bolts 150, aperature154, figures 3, 4a, 4b and col. 9 line 31 through col. 19 line 15.]

34. With respect to **Claim 13**, **Takeshima** does not suggest that "at least one of said" gradient coil "supporting elements comprises a threaded bolt with a pressure plate facing said boundary surface of said cavity." However **Damadian et al.**, shows this limitation [See gradient coil components 98, 102, 142; figures 5a, 5b, 6, 7, 8, bolts 150, aperature154, figures 3, 4a, 4b and col. 9 line 31 through col. 19 line 15.] It would have been obvious to one of ordinary skill in the art at the time that the invention was made to

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modify the teaching of **Takeshima** with the teaching of **Damadian et al.**, because **Damadian et al.**, shows the feature of securing the middle portion of a gradient coil system 142, in figures 5a, 5b, 8 and. 92 in figure 7 to the support 140, 100 by means of threaded bolts 150 and an additional plate-like structure, [See figures 5a through 8] while figure 7 shows the edge gradient coil 98 secured to support 96 of figure 7 directly. Therefore, the use of bolts to secure a gradient coil component to a boundary support region when a middle portion of the gradient coil assembly is displaced from the edges is already established in the art, to provide additional support and prevent the middle section from falling or moving. The examiner notes that because the middle section of the gradient coil system can be lowered via the hydraulics of figure 7 that the middle section of upper support 30, without the securing bolts 150, intrinsically has a lower mechanical stiffness than gradient coils 98 secured to support 96 that are directly mounted to upper and lower component 30.] The same reasons for rejection, obviousness, and motivation to combine that apply to claims 1 12 also apply to claim 13 and need not be reiterated.

35. With respect to **Claim 14**, **Takeshima** does not suggest that the "gradient coil system comprises a carrier having a threaded bore therein in which said threaded bolt is received." However, **Damadian et al.**, shows this limitation (i.e. component 148 of **Damadian et al.**, is a threaded bore in figures 5a, 5b, 7, and 8) "therein in which said threaded bolt is received." [See gradient coil components 98, 102, 142; figures 5a, 5b, 6, 7, 8, bolts 150, aperture 154, figures 3, 4a, 4b and col. 9 line 31 through col. 19 line 15.] It would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the teaching of **Takeshima** with the teaching of **Damadian et al.**, because **Damadian et al.**, shows the feature of securing the middle portion of a gradient coil system 142, in figures 5a, 5b, 8 and. 92 in figure 7 to the support 140, 100 by means of threaded bolts 150, and threaded bores (i.e. component 148) and an additional plate-like structure, [See figures 5a through 8] while figure 7 shows the edge gradient coil 98 secured to support 96 of figure 7 directly. Therefore, the use of threaded bolts and threaded bores to secure a gradient coil component to a boundary support region when a middle portion of the gradient coil assembly is

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displaced from the edges is already established in the art, to provide additional support and prevent the middle section from falling or moving. The examiner notes that because the middle section of the gradient coil system can be lowered via the hydraulics of figure 7 that the middle section of upper support 30, without the securing bolts 150, of threaded bores intrinsically has a lower mechanical stiffness than gradient coils 98 secured to support 96 that are directly mounted to upper and lower component 30.] The same reasons for rejection, obviousness, and motivation to combine, which apply to **claims 1, 12, 13** also apply to claim **14** and need not be reiterated.

Prior Art of Record

36. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

A) Schuster et al., US patent application publication 2004/0113619 published June 17th 2004, which is the publication of applicant's instant application which is known for purposes of a complete record. This reference is not available as prior art because it is applicant's own work,

B) Heid et al., US patent 6,531,870 B2 issued March 11th 2003, filed December 21st 2001.

C) Morich US patent 5,296,810 issued March 22nd 1994.

D) McGinley et al., US patent 6,208,144 B1 issued March 27th 2001, filed May 18th 1999. [See figures 1 through 3, abstract, col. 1 line 50 through col. 5 line 52.]

D) Sellers et al., US patent 6,107,799 issued August 22nd 2000.

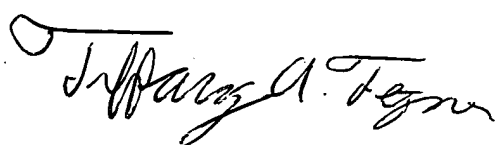
E) Schuster US Patent Application Publication 2004/0113618 A1 published June 17th 2004, filed October 3rd 2004, which has the same filing date as applicant's instant application.

Conclusion

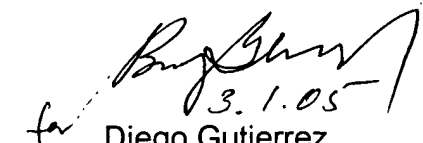
37. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tiffany Fetzner whose telephone number is: (571) 272-2241. The examiner can normally be reached on Monday-Thursday from 7:00am to 4:30pm., and on alternate Friday's from 7:00am to 3:30pm.

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38. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez, can be reached at (571) 272-2245. The **only official fax phone number** for the organization where this application or proceeding is assigned is **(703) 872-9306**.



TAF
March 1, 2005


for Diego Gutierrez
Supervisory Patent Examiner
Technology Center 2800